

## ABSTRACT

The present invention is an apparatus for Fourier transform  
5 spectrometry using a fixed or non-scanning interferometer wherein a pair  
of separated phase related electromagnetic or radiant sources produce an  
interference pattern that is detected and converted into its respective  
spectral content by a stationary converter. One application for this  
apparatus includes analyzing signal from a Bragg fiber-grating sensor.  
10 When coupled to a Bragg fiber-grating sensor this apparatus forms the  
basis of a wavelength demodulator. This demodulator converts optical  
frequencies down to electrical frequencies that can be readily measured  
with an electronic converter. This fixed interferometer has no moving  
parts, which greatly reduces its complexity and cost compared to a  
15 scanning interferometer.